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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,930	09/30/2003	Terry L. Schneider	7784-000553CPB	5157

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EXAMINER	
CROUSE, BRETT ALAN	

ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
11/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/674,930	SCHNEIDER, TERRY L.	
	Examiner	Art Unit	
	Brett A. Crouse	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-21 and 24-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-21 and 24-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to applicant's amendment and request for continued examination, filed 29 October 2007, which amends claims 1, 14, and 26, cancels claims 10, 22 and 23. Claims 1-9, 11-21, and 24-36 are pending.

Response to Amendment

Applicant's amendment, filed 29 October 2007, with respect to the rejection of claims 10, 22 and 23 under 35 U.S.C. 103(a) as being unpatentable over (Ogata, US 6,099,969) overcomes the rejection due to cancellation of claims 10, 22 and 23.

Applicant's arguments, see the declaration filed under 37 C.F.R. 1.132 by Terry L. Schneider, filed 29 October 2007, with respect to the rejection of claims 1-9, 11, 13-21, 24-32, and 34-36 under 35 U.S.C. 103(a) as being unpatentable over (Ogata, US 6,099,969) have been fully considered and are persuasive. The rejection of claims 1-9, 11, 13-21, 24-32, and 34-36 has been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-9, 11-21, and 24-36 stand rejected under 35 U.S.C. 103(a) as being unpatentable over (Terasaka, US 5,770,305) hereinafter known as Terasaka as evidenced by http://herkules.oulu.fi/isbn9514252217/html/x317.html, Fundamental characteristics of nickel-titanium shape memory alloy, Oulun Yliopisto.

Terasaka teaches:

> Column 2, line 65 through column 3, line 9 with reference to figure 4, teach an anisotropic conductive film formed of an epoxy resin and contributing to adhesion. Conductive particles dispersed in the resin can be Titanium – Nickel alloy.
>
> Column 3, lines 17-18, teach that the particles have a mean particle size of 8μm.
>
> Column 2, line 65 through column 3, line 9 with reference to figure 4, further teaches that the alloy expands or contracts in response to stress and the alloy particles can be crushed due to stress. The various shaped encompassed by the base particles and stress induced deformations is held to encompass spheres, ovals, and cylinders. The limitation granules, is held to be encompassed within the particle size distribution disclosure of a mean particle size of 8μm.

Terasaka does not teach the resin composition in the form of paint. In the absence of a definition, the term paint is given little patentable weight and is equated with a coating. It would have been obvious to one of ordinary skill in the art at the time of invention to produce a resin including a pigment to make the coating aesthetically pleasing.

Terasaka further does not teach an austenitic or martensitic crystal structure of the alloy. It is noted that a nickel-titanium alloy is inherently either in an austenitic or martensitic crystal

structure dependent on temperature and the relative percentages of the constituent metals, as evidenced by Fundamental characteristics of nickel-titanium shape memory alloy, and it is therefore obvious that it will exist in the film or phase as such. Column 2, line 65 through column 3, line 16, teaches that the ultra resilient alloy is in a compressed state due to stress acting upon it from the outside. As the resin expands due to a change in temperature thereby pushing the connection terminals upward the stress acting on the particles is reduced and the particles expand due to their righting force. The compressed state of the particles, prior to expansion embodies a martensitic state of the ultra resilient particles and the expansion of the particles due to the lower stress upon the particles, resulting from the expansion of the resin, results in the particles changing from the martensitic state to the austenitic state. Thus, during the course of operation of the ACF of Terasaka the ACF of Terasaka will materially embody all the elements of a base compound (resin) having a plurality of SMA particles dispersed therein, said SMA particles being in an austenitic state after expansion due to the reduction of stress upon the particles. The compression-after-impact performance will be a material characteristic of the combination of resin base compound and austenitic particles.

Terasaka further does recite a volume percent for amount of alloy within the resinous material. Column 3, lines 33-38 with reference to figure 5, teaches that the alloy content of the resin is 3 weight percent. The density of nickel-titanium alloy is about 6.5 g/cm^3 and the density of for example, phenolic resin is about 1.25 g/cm^3. This results in a volume percentage of about 0.58 percent. This teaching is held to suggest about 1 volume percent as required by claims 6, 7, 19, 20, 28, and 29, which could be easily optimized by one of ordinary skill in the art.

Claims 1-9, 11, 12, 14-21, 24, 26-33, 35, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakawa et al., WO 03/102071 hereinafter known as Yamakawa. Yamakawa teaches:

Paragraph [0005], teaches a composition comprising (A) a curable liquid polymer, (B) a shape-memory alloy filler, and (C) a thermoconductive filler.

Paragraph [0007], teaches that during the pre-curing, curing, or post-curing process it is necessary to raise the temperature above the transition point of the shape-memory alloy. This is held to teach that the shape-memory alloy particles will be in the austenitic state.

Paragraph [0008], teaches the shape-memory alloy can be nickel-titanium. The paragraph also teaches that the shape-memory alloy can be in the form of particles. The average particle diameter is in the range of 5 to 500 microns. The paragraph additionally teaches it is recommended to use component (B), (shape-memory alloy), in an amount of 0.01 to 30 weight percent, preferably 0.1 to 20 weight percent.

Paragraph [0010], teaches the composition can be used as an adhesive or coating.

Paragraph [0022], teaches the composition functions as a protective layer and as an adhesive.

Yamakawa does not teach the resin composition in the form of paint. In the absence of a definition, the term paint is given little patentable weight and is equated with a coating. It would have been obvious to one of ordinary skill in the art at the time of invention to produce a resin including a pigment to make the coating aesthetically pleasing.

Yamakawa further does recite a volume percent for amount of alloy within the resinous material, instead teaching 0.01 to 30 weight percent. The density of nickel-titanium alloy is about

6.5 g/cm^3 and the density of for example, phenolic resin is about 1.25 g/cm^3. This results in a range of volume percentages which overlaps the claim range of 1 to 50 volume percent of the instant invention.

Yamakawa does not recite the shape of the particles as spheres, ovals or cylinders, instead reciting fibers, flakes, scales, and plates. The teaching of fibers is equated with cylinders and spheres due to the teaching in paragraph [0008] of the diameters and lengths of the fibers. Additionally, the average diameter teaching with regard to plates is held as encompassing an oval.

Response to Arguments

With respect to the rejection of claims 1-9, 11-21, and 24-36 under 35 U.S.C. 103(a) as being unpatentable over (Terasaka, US 5,770,305) hereinafter known as Terasaka as evidenced by http://herkules.oulu.fi/isbn9514252217/html/x317.html, Fundamental characteristics of nickel-titanium shape memory alloy, Oulun Yliopisto applicant argues Terasaki fails to teach a stress induced phase change in the operation of the invention of Terasaka thus not teaching or suggesting the instant invention. The examiner respectfully disagrees on two points; first, the method in which a film comprising the elements of the instant invention is formed is not the focus of the claims of the instant invention. It is the ability of the film to embody the material elements of the claim and as such provide the desired stress induced phase change which is claimed. Second, attention is directed to column 3, lines 10-16, which teach the resin expands due to a change in temperature and as a result the stress acting between the particles is reduced. This (the reduction of stress acting between the particles) causes the particles (such as NiTi) to

expand, thus teaching a stress induced phase change. This expansion is the result of the particles changing state to the austenitic state. This material combination in the film of Terasaka possesses the elements of a base (resin) material, and nickel-titanium particles in the austenitic state (expanded particles) and as such would be expected to possess the compression-after-impact performance as a material characteristic of the combination of resin base compound and austenitic particles. One would additionally expect that as the film of Terasaka cools and the resin contracts that the resulting stress would cause the particles to again revert to a compressed state.

With respect to the references cited as evidence in the rejection over Terasaka. The references are not relied upon to provide elements of the rejection, only to clarify the properties associated with shape memory alloys.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is 571-272-6494. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terell H. Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BAC/ 7 November 2007

MILTON I. CANO
SUPERVISORY PATENT EXAMINER